## Listing of Claims:

1-35. **(Canceled)**

36. **(CURRENTLY AMENDED)** A systems-biology platform-based integrated biosensor and simulation system comprising:

at least one implantable biosensor for sensing a biological target to generate a signal; and

a simulator comprising a systems-biology platform for using the signal and a model of the target to generate a therapeutic or diagnostic output;

wherein said sensor is reconfigurable by said simulator, whereby the simulator automatically integrates the target biosensing with in-vivo modeling to simulate the biological target as a whole organism using the systems-biology platform that comprises computational modeling hardware and software analysis genomics, proteomics, computational chemistry, pharmacogenomics, computational biology, computational biophysics, computational cell behavior, pharmacokinetics, metabolomics, and transcriptomics automated tools, such reconfiguration thereby reconfiguring a biocatalytic chip, a logic device, a tissue scaffold, a therapeutic reservoir, a probe arranger, or a DNA microarray.

37. **(Previously presented)** The system of claim 36 wherein: the sensor senses a food material for consumption by the biological target to generate a second signal, the simulator further using the second signal to generate the therapeutic or diagnostic output.

38. **(Previously presented)** The system of claim 36 wherein: the simulator generates the output according to a regulatory condition.

39. **(Previously presented)** The system of claim 36 wherein: the sensor couples to the simulator via a programmable switch.

40. **(CURRENTLY AMENDED)** A systems-biology platform-based method comprising the steps of:

sensing with an implantable biosensor a biological target to generate a signal; and

simulating with a simulator comprising a systems-biology platform using the signal and a model of the target to generate a therapeutic or diagnostic output; wherein said simulator reconfigures said biosensor, whereby the simulator automatically integrates the target biosensing with in-vivo modeling to simulate the biological target as a whole organism using the systems-biology platform that comprises computational modeling hardware and software analysis genomics, proteomics, computational chemistry, pharmacogenomics, computational biology, computational biophysics, computational cell behavior, pharmacokinetics, metabolomics, and transcriptomics automated tools, such reconfiguration thereby reconfiguring a biocatalytic chip, a logic device, a tissue scaffold, a therapeutic reservoir, a probe arranger, or a DNA microarray.

41. **(Previously presented)** The method of claim 40 wherein: the sensor senses a food material for consumption by the biological target to generate a second signal, the simulator further using the second signal to generate the therapeutic or diagnostic output.

42. **(Previously presented)** The method of claim 40 wherein: the simulator generates the output according to a regulatory condition.

43. **(Previously presented)** The method of claim 40 wherein: the sensor couples to the simulator via a programmable switch.

44. **(Previously presented)** The method of claim 40, wherein said sensor is implanted in a subject's mouth, larynx, blood vessel, vein, nose, ear, eye, heart, brain, lymph node, lung, breast, stomach, pancreas, kidney, colon, rectum, ovary, uterus, bladder or prostate.

45. **(Previously presented)** The method of claim 40, wherein said biosensor comprises an array of at least two sensors.

46. **(Previously presented)** The method of claim 45, wherein said at least two sensors are capable of sensing two different biological targets.

47. **(Previously presented)** The method of claim 46, wherein said different biological targets are selected from a group consisting of DNA, RNA, peptide, antibody, antigen, tissue factor, virus, lipid, fatty acid, steroid, neurotransmitter, carbohydrate, free radical, neural, chemical, metabolite and cell.

48. **(Previously presented)** The method of claim 40, wherein said reconfiguring comprises activating or deactivating said biosensor.

49. **(Previously presented)** The method of claim 45, wherein said reconfiguring comprises activating or deactivating at least one of said at least two sensors.

50. **(Withdrawn)** The method of claim 40, wherein said reconfiguring comprise hardware reconfiguration.

51. **(Previously presented)** The system of claim 36, wherein said simulator is capable of activating or deactivating said sensor.

52. **(Previously presented)** The system of claim 36, wherein said sensor is capable of functioning in a subject's mouth, larynx, blood vessel, vein, nose, ear, eye, heart, brain, lymph node, lung, breast, stomach, pancreas, kidney, colon, rectum, ovary, uterus, bladder or prostate.

53. **(Previously presented)** The system of claim 36, wherein said biosensor comprises said at least one sensor and at least a second sensor.

54. **(Previously presented)** The system of claim 53, wherein said at least one sensor and said at least second sensor are capable of sensing two different biological targets.

55. **(Previously presented)** The systems of claim 54, wherein said different biological targets are selected from a group consisting of DNA, RNA, peptide, antibody, antigen, tissue factor, virus, lipid, fatty acid, steroid, neurotransmitter, carbohydrate, free radical, neural, chemical, metabolite and cell.